Tropentag, September 11-13, 2024, hybrid conference

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Water-saving irrigated rice cultivation promotes rice plant growth and improves farmers' income

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Abstract

Rice cultivation contributes to a large amount of methane gas (CH_4) emissions through the decomposition of organic matter by microorganisms under anaerobic conditions. Water-saving irrigation technologies have been developed and introduced in various rice-growing regions. However, the implementation of these technologies is still limited and the principles of these technologies are not fully applied in practice. If the benefits of water-saving irrigation technologies for rice productivity and farmers' income are recognised, this may motivate farmers to apply the technologies in practice. The project was put into practice on a large area to evaluate the impact of water-saving irrigation technologies on rice crop growth and CH_4 emission reduction. The results show that, in addition to the benefits of saving water, these technologies also increase the growth of rice plants (number of tillers, biomass) and resistance to lodging, which leads to a higher yield. This is particularly beneficial in the tropics, which are often affected by monsoons and rainstorms at harvest time. In addition, the application of water saving irrigation technologies also promotes earthworm activity in the soil, which is of great importance for soil health and increases the oxygen content in the soil. In addition, water-saving irrigation technologies significantly reduce CH_4 emissions in rice fields, which are higher in transplanted rice than in direct-sowing rice. The reduction in CH_4 emissions can be converted into carbon credits, which increases the income of rice producers. These benefits are therefore the basis to encourage farmers to adopt water-saving irrigation technologies in sustainable agriculture and improve their income.

Keywords: Carbon credit, farmer income, methane gas emission, paddy rice

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